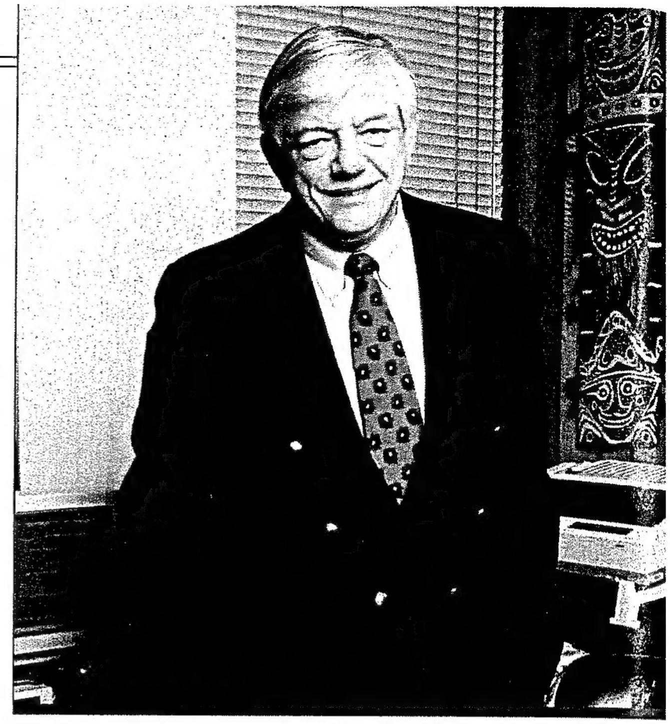
INTERVIEW

Gerald Appel, With Systems And Forecasts

Gerald Appel, who is well known in the annals of technical analysis, doesn't only publish the Systems and Forecasts *newsletter; he also manages money, with $200 million under management. But he may be best known for something he considers relatively secondary in his accomplishments, for he is also the originator of the popular and enduring moving average convergence/divergence (MACD) indicator. STOCKS & COMMODITIES Editor Thom Hartle interviewed Gerald Appel on December 16, 1993, via telephone, during which he talks about the indicators he uses — including the MACD — and how he uses them.*



I focused on technical analysis for monitoring and timing the stock market, with a particular emphasis on objectifying a timing signal, as opposed to treating subjectively the various indicators that people use. There are many assumptions around the stock market about the validity of technical indicators that don't test very well when subjected to statistical evaluation. That really became my interest, developing technical methods and models that were objective.

Photographs by David R. Randell

Gerry, today you're a money manager and the publisher of an investment advisory newsletter, but obviously you didn't begin that way. How* did *you get started?

I started back in the mid-1960s, when I was investing and trading for myself. My investment education came from my own research and subscribing to just about every advisory service I could get my hands on. But my background was actually in psychotherapy, which I was practicing at the time.

Do you have a medical degree, then?

No, I have an MSW — a master's degree in social work. I completed a training program in psychoanalysis at the Theodor Reik Training Institute in New York. Anyway, I submitted various articles to magazines like *Money* and a magazine called *Free Enterprise*. I'd been writing for Yale Hirsch's *Stock Trader's Almanac* and *Smart Money* and as a result, I developed an audience. So in 1973 I decided to start my investment advisory letter, which has been in publication since. In addition, a number of my subscribers asked me if I would be interested in actually managing their capital, and I accepted. Eventually, that grew into managing close to $200 million.

And you focused on technical analysis for monitoring and timing the stock market?

Pretty much so, with a particular emphasis on objectifying a timing signal, as opposed to treating subjectively the various indicators that people use. There are many assumptions around the stock market about the validity of technical indicators that don't test very well when subjected to statistical evaluation. That really became my interest, developing technical methods and models that were objective, that could be used in actual trading, especially mutual funds.

How do you develop a trading model?

To create a really good model, you need to have a combination of a few rules but not too many. If you have too many rules, all you've done is created a very curve-fitted model and you've thrown in all these extra rules to cover the activity that don't fit the other rules! You can make a model like that look good in backtesting, but it's not likely to perform well in real-time usage.

To create a good trading model, you need to have a combination of a few rules but not too many. If you have too many rules, all you've done is create a very curve-fitted model!

How many rules is a reasonable number?

Maybe five or six trading rules that occur with considerable frequency and that make sense in terms of how the market as I know it behaves.

What are some indicators to use to assess the condition of the market?

Some of the indications that I've found very useful in terms of assessing the market have to do with the measurement of initial impulses. Think of a baseball that, once squarely hit by a bat, leaves the bat quickly; you assume it's going to carry some distance because of the speed with which it starts. The same thing's true in the stock market. Very often, we can assess how far a move will carry by how far the initial thrust goes.

How do you measure the impulse move of the market?

There are a number of techniques — for example, by measuring how far away the New York Composite Index is from its 10-week moving average (Figure 1). If the five-day moving average of the index can initially climb greater than five points above its 10-week moving average, that implies a strong up move. In fact, that much initial power is likely to have continuation. If the index only gets about two points or so above its 10-week moving average, then the move can't be expected to carry too far. You would want to maintain a shorter-term trading viewpoint rather than a longer-term one.

Are there other ways that you can measure the strength of a move?

Yes, there are. Another measurement involves a three-day exponential average of the daily advances minus declines on the New York Stock Exchange (Figure 2). If, on an up move, the three-day exponential reaches 500, that almost always implies that you're at the start of a really good immediate upswing. If it doesn't get above 300 or 400, then you probably don't have anything more than an average upswing, which may carry the market by 4% or 5%, say.

How about a downside measurement?

On the downside, if a down move can generate a three-day exponential average of 600 or more declines over advances, that usually indicates a pretty good down move, one that would carry for a while. If it doesn't build up, then the likelihood of the market having a minor correction is high.

So you look at this indicator day to day?

Yes. As a move progresses, you can gradually see how the strength or weakness of the indicator relates to the development of the move. As the indicator begins to reach lesser extremes, you know you're approaching a top or a bottom.

So you look for divergence with the indicator and the stock market?

Not so much divergence. Just compare what this indicator does relative to the broad market index. Say that the market has a few days of up, then a couple days of down, then another few days of up; you measure the impulse power of each up move by how much strength the three-day exponential average of the daily advances minus declines can give you. You may find that the market rally may start at plus 600 or 500; as the market tops out, the indicator may never reach more than 200. You can see how the market is rolling over and you can prepare for a reversal.

You also look at the rate of change of the A-D line, don't you?

Yes.

How do you use rate of change?

We use rate of change with two timeframes: a 10-day timeframe and a 21-day timeframe. The 21-day timeframe was suggested by William Schmidt of Tiger Software. The 10-day we use is similar to an overbought/oversold oscillator, but we divide the market into oversold and very oversold conditions. For example, if the 10-day advance-decline line has lost between 2,000 and 3,000 over a 10-day period, that's oversold. And if the market turns up at that point, that would easily represent a turning point for a five- to six-week trading cycle. It would generally be about three weeks up. The cycle is about five to six weeks from low to low, so that's about three weeks up and about three weeks back, or three and a half weeks up and two and a half down.

What if the indicator exceeds plus or minus 3,000?

If it gets much lower than minus 3,000 — say, minus 4,000 or minus 5,000 — then you have a downward move that's more serious. I would expect prices to still work lower after a near-term rally. Same thing for an up move. If, during a market rally, the 10-day rate of change of the A-D line peaks at close to plus 3,000, that's a pretty good sign that the up move is over. If the 10-day indicator gets to plus 5,000 or 6,000, well, that doesn't happen too often; that's a sign that you've got a really strong up impulse, and you may be in for an up move that's going to last for several months.

How do you calculate the indicator?

It's the rate of change of the advance-decline line — that is, the running sum of the daily advances minus declines today compared with the A-D line 10 days ago. A minus 3,000 reading would imply that there's been 3,000 more declines than advances over the last 10 days.

How do you use the 21-day indicator?

The 21-day unit is longer term; it measures longer cycles. I compare peaks in the indicator to peaks in the market (Figure 3). If the DJIA makes a new high and the 21-day rate of change over the current 21 days fails to match its previous peak, you want to be very careful in the stock market.

Okay. What if the DJIA falls?

Conversely, if the DJIA has taken a selloff of, say, 5% or 6% but the 21-day advance-decline is still favorable, that's usually a sign that you had a rather narrow decline and there's going to be a good stock market rally ahead. We use this more as an anticipatory indicator.

In monitoring the advance-decline line, do you look at the daily A-D line and the weekly A-D line?

Yes, we look at both. The weekly advance-decline numbers historically haven't been a leading indicator. Most of

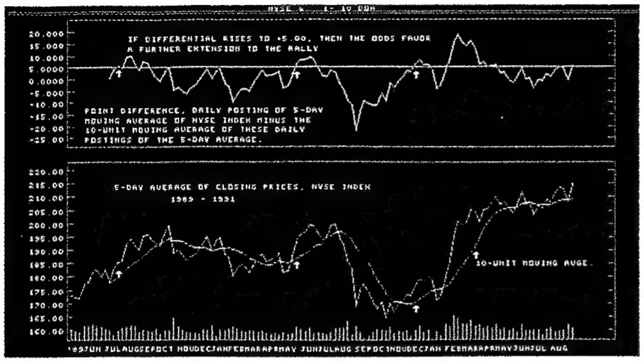


FIGURE 1: NYSE INDEX AND MOVING AVERAGE SPREAD. *To measure the impulse move of the market, measure how far away the composite index is from its 10-week moving average. If the five-day moving average of the index can initially climb greater than five points above its 10-week moving average, that implies a strong up move. If the index only gets slightly above its 10-week moving average, then the move cannot be expected to carry too far.*

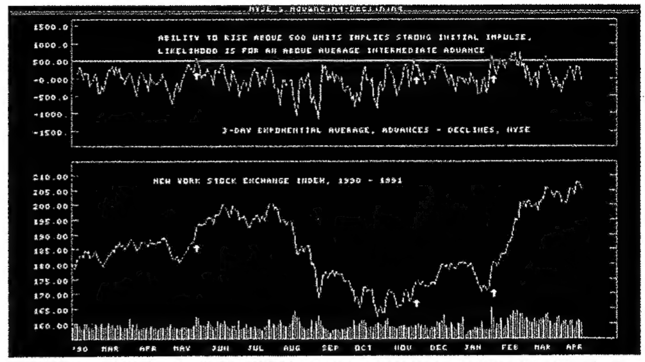


FIGURE 2: NYSE AND 3-PERIOD EMA DAILY ADVANCES MINUS DECLINES. *The strength of a move can also be measured with a three-day exponential average of the daily advances minus declines on the New York Stock Exchange. If, on an up move, the three-day exponential reaches 500, that may imply that a good immediate upswing is under way.*

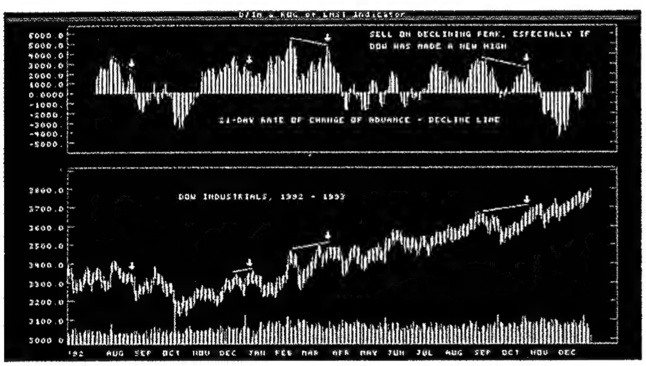


FIGURE 3: DJIA AND 21-DAY RATE OF CHANGE A-D LINE. *The 21-day indicator is longer term; it measures longer cycles. Peaks in the indicator can be measured to peaks in the market. If the DJIA makes a new high and the 21-day rate of change over the current 21 days fails to match its previous peak, be very careful in the stock market.*

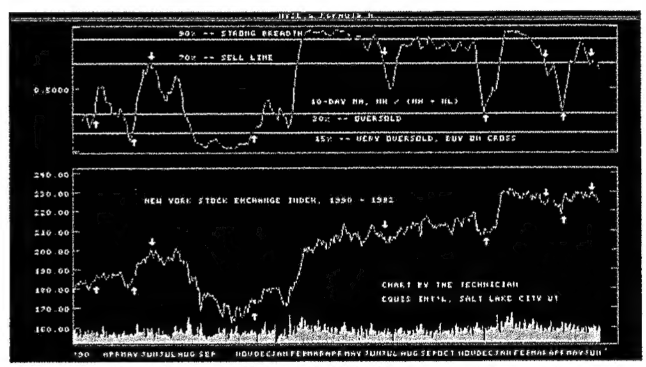


FIGURE 4: NYSE AND 10-DAY MA OF NH/(NH+NL). *To smooth the new high-new low data, calculate the ratio of the number of new highs divided by the sum of new highs and new lows. Then multiply the ratio by 100 so it is on a percentage basis and then calculate a 10-day moving average, as shown here.*

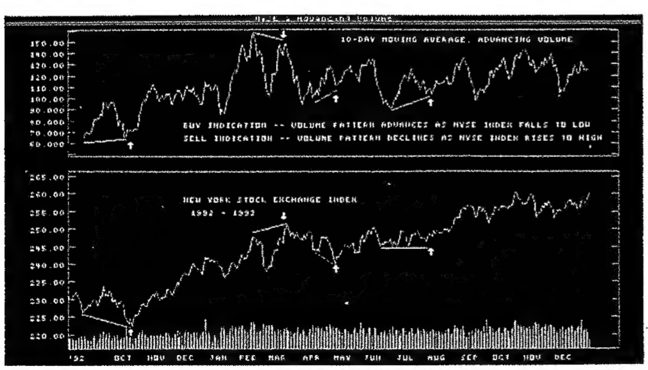


FIGURE 5: NYSE AND 10-DAY MA OF ADVANCING VOLUME. *In an bull market, look at upside volume, because that fuels the market. Compare the 10-day moving average of the advancing volume to the market, as shown here. If a new market high is reached within about a six-week period and the 10-day average of advancing volume is not making new highs as well, that's a warning signal of an impending downturn.*

the time, the weekly A-D line is coincident with market peaks. Once in a while, you get a period when the weekly advance-decline line turns down while the major market averages are still rising. That happened the few months before the 1987 crash and I think it happened, if memory serves, back in 1972 as well. That's quite bearish.

Does the weekly A-D line help during an advance?

It's not particularly bullish if the weekly advance-decline keeps making new highs with the market; it does tend to happen that way. I think this is probably one of the indicators that's most misunderstood because a lot of market analysis takes the position that if the weekly advance-decline line is making new highs, then everything is well and good. But that indicator is not going to usually warn you of anything. It's when it *does* warn you that it's significant.

We've been talking about market peaks. So what about market bottoms?

The same thing with lows. The weekly A-D line will bottom coincidentally with the market.

What makes the daily A-D line more valuable?

The daily advance-decline line is more sensitive and tends to turn down in advance of price peaks in the major averages and give you *some* warning, but it's not very precise. Often, the major averages will rise for several months while the advance-decline line is actually drifting down. The daily A-D line does have more lead time than the weekly advance-decline line. You generally won't get a serious market decline until the daily advance-decline line begins to fail to confirm new highs in the averages. But while nonconfirmation doesn't necessarily imply something serious, it *is* a warning.

Another indicator you researched is the daily new highs and new lows statistics. How do you use that market data?

That's one that we've done a lot of work on and other people give us pretty serious credit for it. I don't think we're the originators of the indicator, but we're one of those who made it more popular.

How do you look at the data?

There are a few ways to use new high/new low data, which I think in many ways is a more significant indicator than advances and declines. Some quick operating rules that we follow: As long as there are 350 stocks on a weekly basis making new highs, the stock market is unlikely to get hit very hard. That data, incidentally, is available in *Barron's* each week.

That sounds simple enough. How else do you use the data?

The stock market likes unanimous consensus. If there are a great number of new highs and relatively few new lows, that's bullish. It's also bullish if there are relatively few new highs and a great number of new lows, which implies that a climactic selloff is taking place.

What* doesn't *the stock market like?

What is *not* good for the stock market is when you have large numbers of issues both making new highs and new lows. Currently, about 200 on each side is a pretty bearish configuration. That implies a diverse or split stock market with about as many stocks falling apart as rising. The stock market averages are being held up by only half the market, and this sort of configuration very often leads to at least an intermediate, sometimes much more serious market decline. Market Logic called the indicator the high/low logic index; they developed it. We use it a little differently than they do.

How do you use the indicator?

First, we calculate the lesser of new highs or new lows on a weekly basis and then divide by the number of issues traded. If the ratio comes to 7.5% or greater of the total number of issues traded, that constitutes a sell signal. For example, if there are 200 new highs and 180 new lows, we would take the lesser figure and use the 180 and divide that by the number of issues traded, which is approximately 2,800 issues that are traded on the New York Stock Exchange.

What else do you use the new high and new low data for?

Well, on a weekly basis, we find that divergences between the numbers of new highs and the direction of the major averages are both pretty significant, especially over a six-week period. For example, if the DJIA has just made a new six-week high, but the number of new highs is not as high as it was six weeks previously, *especially* if it's not above 300, that's

usually a pretty good sign that an intermediate selloff is about to take place.

Does it work well in other situations too?

It works very well at market bottoms also. If the DJIA or the Standard & Poor's 500 has just made new lows but the number of new lows don't confirm the previous number of stocks making new lows, you can pretty well expect the stock market to turn up. We find that a five- to six-week time span is a good window for these divergences.

Do you ever smooth the new high-new low data?

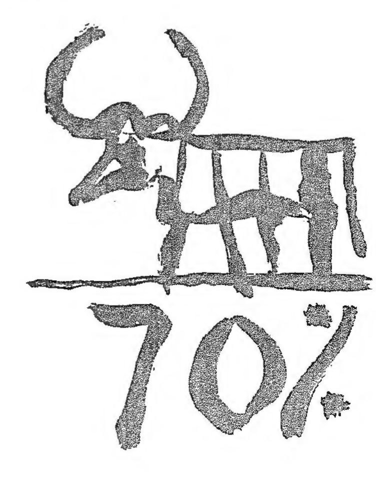
Yes, we do. Each day, we calculate the ratio of the number of new highs divided by the sum of new highs and new lows. Then we multiply the ratio by 100 so it is on a percentage basis and then calculate a 10-day moving average (Figure 4). I find two rules very useful: First, if the indicator falls to 30% and then turns up, it's a buy signal. If it gets very oversold — say, it falls below 15%, which happens very rarely — then you're probably better off waiting for it to actually rise to 20%. If it bottoms out between 20% and 30%, you can just buy the upturn in the market. If it gets too much lower, you should give it a little more time.

How about overbought readings?

If the indicator climbs to more than 90%, that generally takes place only during strong market periods. If we see a reading this high, we expect that the market will carry for several weeks sometimes and often months to the upside. For example, when the 1982 bull market got under way, the 90% reading was reached pretty early. We use a 70% level to sell once 90% has been reached; that would have kept you in the market for nearly a year till the middle of 1983.

This indicator is used similar to your other work, measuring the strength of an impulse?

Yes; 90% implies a lot of market strength for the longer term. As long as the indicator stays over 70%, you can pretty well stay in the stock market. We use the 70% level as the sell level, and if it falls from above to below that, then the near-term indication is negative. Basically, 30% is a good buy area on a turnup in the market and 70% is a good sell area when the market turns down, and you'd stay in the market as long as the indicator stays over 70%.



Another indicator you like is the 10-day average of advancing volume. Tell us about it.

That's a good leading indicator for intermediate-term trading. Volume is what fuels the market. The stock market rarely reaches the absolute high with a simultaneous peak in volume.

The volume peak precedes the high?

That's right. Volume peaks generally precede the high, so that as long as advancing volume reaches new highs, you can generally expect any tops that are made, at the very least, to be tested and will probably be surpassed. Not necessarily by much, but you have time to get out.

Do you use the separate advancing volume and declining volume as compared with total volume?

If you're in an bull market, we look at upside volume, because that's the fuel that's driving the market. We compare the 10-day moving average of the advancing volume to the market (Figure 5). If you get a new market high, again within about a six-week period, and the 10-day average of advancing volume is not making new highs along with the market, that's a warning signal of an impending downturn.

Do you use the declining volume for market declines?

If the market's declining, you can either use the 10-day average of declining volume — the volume of declining stocks — or you can simply stay with the rising volume. If you see the 10-day average of advancing volume rising as the stock market is falling, you know that more buying is going into stocks. If no new lows are made in the 10-day volume for a period of about three weeks, that's a pretty good entry signal in and of itself. Watch for the stock market making marginally lower lows as the 10-day moving average of upside volume begins to pick up. You know that the big money is now beginning to accumulate stocks, getting ready for the market to turn.

So you combine these indicators to generate your buy and sell signals?

The scenario could be like this. As the market drifts lower and lower, we're looking to see whether the numbers of new lows are contracting, which would imply that market breadth is improving underneath the surface. We look to see whether up volume is beginning to pick up, which would imply that money is beginning to accumulate in stocks. Once that takes place, we have to have some sort of trendline break to have a pretty good entry point.

Your research also includes using the interest rate environment as a backdrop for your market indicators.

We've evolved into the position that the interest rate climate sets the stage and

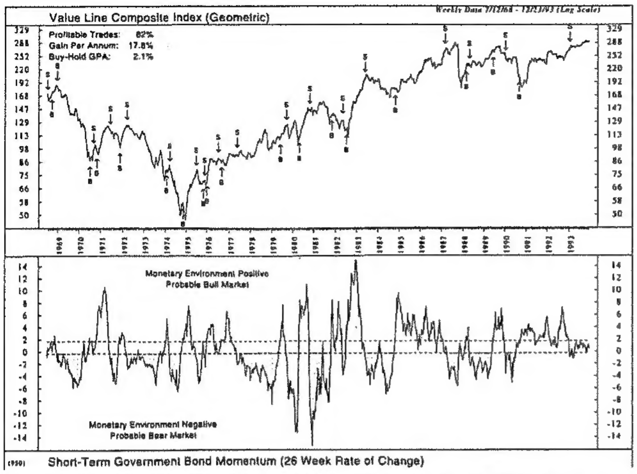


FIGURE 6: VALUE LINE AND SHORT-TERM GOVERNMENT BOND MARKET. *Some of the indicators to use for the interest rate environment involves comparing current interest rates with interest rates from six months previous. If interest rates are lower than they were, meaning that bond prices are higher, then a bullish situation exists for the stock market. Take an average of the yield of three- and five-year Treasury notes, and that would be your short-term bond component, as shown here. If interest rates are lower, then that would be positive for the stock market, and if interest rates are higher, then that is negative for the stock market.*

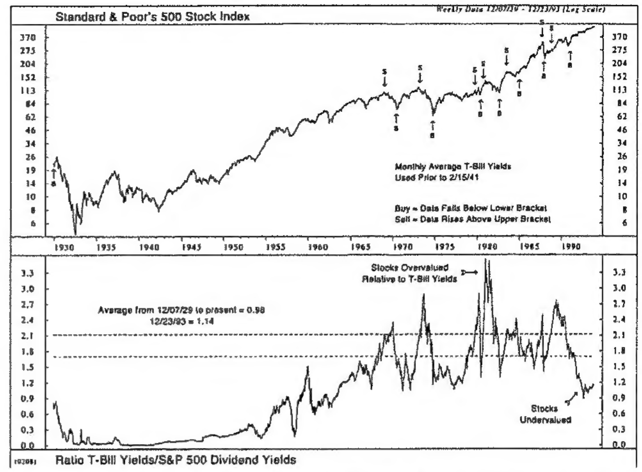


FIGURE 7: S&P 500 AND T-BILL YIELD/DIVIDEND YIELD. *To compare the dividend rate to the T-bill rate, first, divide the Treasury bill yield by the dividend payout of the S&P 500, as shown here. If Treasury bills are yielding 4% and the Standard & Poor's 500 index is yielding 3%, that would be a reading of 1.33, which is a better fix both on stock valuation and also on comparing the impact of interest rates to stock valuation.*

Courtesy Ned Davis Research

now we're just waiting for the players to make their move. You can have rising markets during periods of rising interest rates, but you're almost certain to have rising markets when the interest rate structure is favorable. Relatively few serious market declines take place in a favorable interest rate climate. You may have made a 10% decline, but not much more.

What are some of the indicators you use for the interest rate environment?

One indicator is comparing interest rates today with interest rates from six months ago. If interest rates are lower than they were six months ago, meaning that bond prices would be higher, then you have a bullish situation for the stock market. Take an average of the yield of three- and five-year Treasury notes, and that would be your short-term bond component (Figure 6). If interest rates are lower, then that would be positive for the stock market, and if interest rates are higher, then that would be negative for the stock market.

Do you look at the long bond as well as short-term rates like Treasury bills?

You do the same thing for the 30-year bonds, and that gives you a fix on what's happening in the longer-term bond market. We do something similar with 90-day

Treasury bills, which is probably more controlling of the stock market forces than the longer-term rates are. The Treasury bill rate is also most easily influenced by actions of the Federal Reserve.

The Fed's influence on T-bill rates is pretty important. So how do you monitor T-bill rates?

For Treasury bill rates, there are two other indicators that we use: First, we simply take the low of the Treasury bill interest rate on any given swing. If rates have been dropping, like moving from 6% to 5% to 4% and below 3%, then that's favorable for the market. If rates rise by half a percent from the low, from 3% to 3.5%, then that's a pretty clear warning signal that the interest rate climate may be turning unfavorable. A rise of a full percent is an outright warning signal.

o the stock market's going to decline at that point?

That doesn't mean that the stock market will decline just because that happens, but it *does* mean that the possibility of a bear market becomes much more real. Stocks are not likely to advance at any great rate. Returns in the stock market are about break even when Treasury bill rates rise. When interest rates are rising, the stock market doesn't necessarily fall — that's one of the misconceptions around.

What if Treasury bill rates fall?

If Treasury bill rates fall by a 0.5% of a peak reading — say, T-bill rates have gone up to 3% or 4% or 5% or 6%, then they drop to 5.5%, then that's a 0.5% drop, and that's bullish. A full percent drop is *very* bullish. Those conditions often take place at the start of a significant bull market. The Fed is moving in to intervene to lower interest rates, which creates a favorable climate for the stock market.

Interest rates are also used as a way to measure valuation for the stock market. What are your thoughts about that?

We've found — and we're not alone — that dividend rates taken out of context are not nearly as significant as considering dividend rates in the context of the interest rate climate, so that a dividend rate of about 3% means one thing when the Treasury bills are yielding 6%, and it means quite another when Treasury bills are yielding 3%, which has been the recent climate. That's why the stock market's been able to hold up so well during 1993. When measuring dividend yield alone, stocks appear to be overvalued, but it's been a very favorable interest rate climate.

How do you compare the dividend rate to the T-bill rate?

We follow what was originally brought to our attention by Ned Davis Research. First, divide the Treasury bill yield by the dividend payout of the S&P 500 (Figure 7). If Treasury bills are yielding 4% and the Standard & Poor's 500 index is yielding 3%, that would be a reading of 1.33. That's a better fix both on stock valuation and also on comparing the impact of interest rates to stock valuation. We like it better than either one alone.

What do the rules for this indicator entail?

This indicator turns bearish when it gets to about 2.1 to 2.2. In other words, Treasury bills are yielding a little bit more than twice as much as the S&P 500. At those levels, a lot of money will begin to flow into a riskless investment like Treasury bills rather than staying with a riskier investment like stocks. When it gets below about 1.7, then it's bullish because Treasury bills are not yielding that much in relationship to stocks; people are beginning to move back into the stock market.

So how did this play out in 1993?

For 1993, even though the dividend yield for the S&P 500 hovered around 2.7%, Treasury bill yields were only about 3.1% for the most part. We dealt with ratios of about 1.2, which is very, very bullish and indicative of why the stock market has been able to keep rising. This indicator, with these parameters, has worked pretty well for the past 25 years.

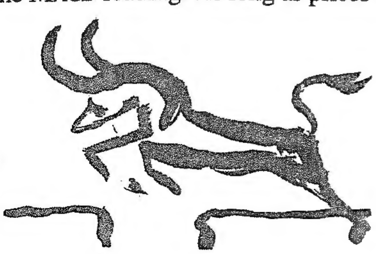
However, these relationships did not hold up as well in the decades prior to 1968. There were bear markets even during periods when the indicator was very favorable.

So you can't hang your hat on just one indicator?

No. For absolute confirmation, you may want to use both Treasury bill indicators. The T-bill/S&P 500 dividend ratio is very positive, but if Treasury bill rates rise by 0.5% or 1%, I want to kind of downplay the T-bill dividend ratio. The most favorable situations occur when stock dividends are relatively high — say, somewhere between 4.5% to 6% — and then this T-bill ratio turns favorable and interest rates start to fall. Then you get a situation where stocks are relatively undervalued on dividend payout and the environment is favorable for interest rates — and *then* we're very likely to have a protracted bull market. This is the situation we had in 1982, when the last great bull market got under way.

Let's change direction a little. One indicator that your name is most attached to is the MACD — the moving average convergence/divergence. What are some of the ways that you can apply the MACD as a timing indicator?

Briefly, the moving average convergence/divergence is the difference between two front-weighted moving averages or exponential moving averages applied to whatever market, index or indicator you want to apply it to. The MACD uses a shorter-term moving average and a longer-term moving average. As a rule, the shorter-term moving average follows the market more closely than the longer-term moving average; in rising markets, a shorter-term moving average would move up and away from the longer-term moving average. The gap between the two is the MACD reading. As long as prices are



rising and that gap is expanding, then the upside momentum is increasing, indicating that the shorter-term trend is still gaining strength versus the longer-term trend; you have a positive situation.

What signals a change? When do we have to worry?

The time to be concerned is when that gap begins to narrow as the market tops, especially if you get a secondary peak in the market and the MACD fails to confirm. Conversely, at market bottoms, you have negative disparity with the short-term average below the longer-term average, and as the market turns, the MACD begins to move closer and closer together. You can use a moving average of the differential and see where that crosses for your signals.

We've found that dividend rates taken out of context are not as significant as considering dividend rates in the context of interest rates, so a dividend rate of 3% means one thing when the Treasury bills are yielding 6%, and it means another when T-bills are yielding 3%, which has been the recent climate.

The standard parameters in technical analysis software are 12- and 26-period exponential moving averages for the MACD and a nine-period exponential moving average for the signal line. Is that the way you recommend using the MACD?

The indicator has become a popular feature in many computer programs: CompuTrac, MetaStock, places like that. The parameters you mentioned are from the initial work I did on the indicator.

Have you refined the technique?

We've come to use that indicator in a lot of different ways. One thing we employ is a faster set of parameters for buy signals than we do for sell signals. The market tends to decline at about twice the rate of speed that it tends to rise. In addition, the market tends to reverse off the lows fairly quickly, whereas declines from peaks usually take a much longer time to develop. We wanted something more sensitive to track the market as it's falling to give us a better entry.

And buy signals?

For buy signals in a declining intermediate trend within the context of a bull market, we may use a six-day for the short-term moving average and 19 days for the long-term, whereas during market advances, we might use something like a 12- and 25- or 26-day combination, sometimes even longer to generate sell signals. For longer-term trading, we use a 19- and 39-day combination, which picks up the longer to intermediate trends much better than it does the short-term ones.

Would that apply to markets other than the stock market?

Sure. You can use it for many markets, be they currency, stocks or bonds, but each market should have its own parameters. We really advise testing with computers to see what parameters work best in particular markets. By and large, though, consider varying the buy parameters and sell parameters to test it out, because in most markets, they should not be the same.

When you actually enter positions in the market, how do you handle the risk of the trade regarding stop-losses and risk management?

For mutual fund trading, which has an advantage in terms of commission structure, we generally use very tight trailing stops of 1% or 2%. Our indicators are generally set so that, except for very long-term stuff, a 1% or 2% decline in the stock market, maybe 3% at the most, would be enough to reverse our buys and sell signals. The ultimate indicator is what's happening in terms of price. The stock market can be perverse — what should be hap-

pening and what *is* happening are two very different things.

So you will take losses?

Yes. There's no reason to hold mutual funds and to take any great risk on any single trade, because you can simply move back in if you're wrong.

Once you have a positive appraisal on the stock market, which mutual funds would you select?

We're finding that long-term performance ranking of mutual funds has some significance, but for most traders, short-term performance rankings are more meaningful. We suggest that investors consider ranking mutual funds by how well they've been performing in the last three weeks or one week and go for the top-performing ones. That'll give them a better shot at outperforming the markets. If you're going to use longer-term timeframes to measure, then you'll probably want to avoid the very top-performing funds, because often by the time they do get to the top, they've exhausted themselves.

So what do we want to look for?

You want to look for funds that are probably, say, between the top 20% and 30% of all funds long term, rather than the very top funds. Then select from that long-term list those funds that are at the very top in terms of short timeframes. Those funds would be the ones that are rising toward the very top in relative strength but are not yet exhausted.

Thank you for your time, Gerry.

You're welcome.

ADDITIONAL READING

Appel, Gerald [1990]. *The Advanced Moving Average Convergence-Divergence Trading Method,* videotape and manual, Signalert Corp.

Market Logic. Institute for Econometric Research, 3471 N. Federal Highway, Ft. Lauderdale, FL 33306.

Systems and Forecasts newsletter, Signalert Corp., 150 Great Neck Road, Great Neck, NY 11021, 516 829-6444.